Amendments to the Claims:
This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An apparatus ~~Apparatus~~ for simulating the deformation of materials, particularly of soft body tissues, comprising:

[[-]] a memory [[zone]] ~~(MEM, MT)~~ configured to ~~adapted to~~ store, for at least one object having a three-dimensional shape:

mechanical parameters of the material of the object,

data as to the position of the object recorded at the vertices of at least one selected mesh, and

force data which represent, in intensity and position, stress to be exerted on the object,

and a computer operatively connected to the memory to evaluate new positions of the vertices, as a function of the stress exerted and the mechanical parameters of the material,

- ~~mechanical parameters of the material of the object (λ, μ)~~
- ~~data as to the position of the object (Lj) recorded at the vertices (Sj) of at least one selected mesh (Tn), and~~
- ~~force data (F_j^n) which represent, in intensity and position, stress to be exerted on the object,~~

~~and a computer (μP, MT) capable of co-operating with the memory zone (MEM) to evaluate new positions of the vertices (Sj), as a function of the stress exerted and the mechanical parameters of the material,~~

wherein ~~characterised in that~~ the computer comprises:

[[-]] a first module (12, 14, 16, 18, 20) configured to ~~adapted to~~ determine repeatedly, for each mesh, the deviation between the current length ~~(lj)~~ of an edge of the mesh and its previous length and/or its length at rest ~~(Lj)~~, and to store respective force data ~~(F_j^n)~~ relating to a potential energy of deformation for each vertex of the mesh, the respective force data being obtained from said deviation, and

[[-]] a second module (30, 32, 36) configured to ~~adapted to~~ determine repeatedly, for each vertex, new data as to the position of the [[this]] vertex ~~Sj (Qn))~~ as a function of the composition of the forces exerted thereon ~~(F_j^n)~~, data relating to at least one previous position of the vertex ~~(Sj(Tn))~~ and mechanical parameters of the material.

2. (Currently amended) An apparatus ~~Apparatus~~ according to claim 1, wherein ~~characterised in that~~ for an object in the form of a hollow three-dimensional envelope the grid pattern chosen is triangular, and wherein ~~so that~~ the computer is configured to determine ~~is able to determine~~ the composition of forces at each vertex of a triangle, as a function of the deviation between the current length of each side of the triangle and the length of the [[this]] side at rest.

3. (Currently amended) An apparatus ~~Apparatus~~ according to claim 1, wherein ~~characterized in that,~~ for an object of solid three-dimensional shape, the grid pattern chosen is tetrahedral, wherein ~~so that~~ the computer is configured to ~~able to~~ estimate the composition of the forces at each vertex of the tetrahedron, as a function of the deviation between the current length of each edge of the tetrahedron and the length of this edge at rest.

4. (Currently amended) An apparatus ~~Apparatus~~ according to claim 1, wherein ~~characterised in that~~ the computer is configured to ~~adapted to~~ determine differences between the squares of the current length ~~(lj)~~ and the preceding length and/or the length at rest ~~(Lj)~~ of each edge in order to determine said composition of forces.

5. (Currently amended) An apparatus ~~Apparatus~~ according to claim 1, wherein ~~characterised in that~~ the memory [[zone]] is configured to ~~adapted to~~ store, in association with each mesh, mechanical parameters of the material of the mesh ~~(λ_n, μ_n)~~, at least partially defined locally, particularly at the level of the mesh or elements thereof.

6. (Currently amended) An apparatus ~~Apparatus~~ according to claim 5, wherein ~~characterized in that~~ the computer is configured to ~~adapted to~~ determine said deviation between the current and at rest lengths, in order to estimate ~~with a view to estimating~~ a derivative of the potential deformation energy ~~(W)~~ of each mesh[[,]] with respect to the position of each vertex of the mesh, the potential energy of deformation being expressed as a

function of a Green-St Venant tensor ~~(E)~~ and of mechanical coefficients inherent in the material in said mesh[[.]], which provides said force data for the vertex of the mesh.

7. (Currently amended) An apparatus ~~Apparatus~~ according to claim 6, wherein ~~characterized in that~~ the mechanical parameters comprise the Lamé ~~Lame~~ coefficients of the material in each mesh in question ~~(λ_n, μ_n)~~.

8. (Currently amended) An apparatus ~~Apparatus~~ according to claim 1, further comprising ~~characterized in that it comprises~~ a third module for developing a data structure and configured to ~~adapted to~~ delete mesh sides or edges ~~(Ai)~~ which connect two ~~so-called~~ "virtual" vertices ~~(Si)~~.

9. (Currently amended) An apparatus ~~Apparatus~~ according to claim 8, wherein ~~characterized in that~~ the third module for developing the data structure is further configured to ~~adapted to~~ verify that the grid pattern satisfies predefined properties of conformity.

10. (Currently amended) An apparatus ~~Apparatus~~ according to claim 1, wherein ~~characterised in that~~ the second module ~~(30, 32, 36)~~ configured to ~~adapted to~~ determine the new positional data of the vertices ~~(Q'n)~~ as a function of the composition of forces at each vertex, is configured to ~~adapted to~~ determine said new positional data as a function of time ~~(E3)~~, which makes it possible to follow the evolution of the respective positions of the vertices over time.

11. (Currently amended) An apparatus ~~Apparatus~~ according to claim 10, wherein ~~characterised in that~~ the determination of the new positional data of the vertices ~~(Q'n)~~ uses a model for solving a differential equation applied to each vertex.

12. (Currently amended) An apparatus ~~Apparatus~~ according to one of the preceding claims, wherein ~~characterised in that~~ the computer is capable of repeatedly determining the positional data of the vertices of the grid, in order ~~with a view~~ to determine ~~determining~~ the evolution of said positions over time ~~(t+Δt)~~.

13. (Currently amended) An apparatus ~~Apparatus~~ according to claim 12, further comprising ~~characterised in that it comprises~~ a display interface ~~(VISU, IG)~~ capable of

representing the object in a predetermined form and shown with the desired grid pattern, and wherein ~~in that~~ the display interface is operatively connected to ~~adapted to co-operate with~~ the computer in order to display the shape of the moving object.

14. (Currently amended) An apparatus ~~Apparatus~~ according to claim 1, further comprising ~~characterised in that it comprises~~ a user interface ~~(IU)~~ provided with a handling device ~~(CLA, MO)~~ for simulating one or more forces exerted globally on the object.

Amendments to the Drawings:

Please substitute the attached drawing sheets (containing Figures 3-7) of corrected drawings for the drawing sheet containing Figures 3-7 originally filed with the application. Figures 4B-7 are currently amended.

The specific changes that have been made to Figures 4B-6 is that the Figures are now denoted with similar notations to that of Figure 4A. Specifically, The virtual vertex has been labeled "Si," the edge has been labeled "Ai" and the vertex to be removed is labeled "Sr."

The specific changes that have been made to Figure 7 is that the typographical errors in the drawing have been corrected and notations have been added to clearly define what is being shown in the drawing. Specifically, step 42 now reads "Object fully returned to resting position?" The path between step 42 and step 40 is labeled "yes." The path between step 42 and step 44 is labeled "no." These changes are supported by at least pages 18 and 19 of the specification.